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A RECOVERY CAGE TO DETERMINE THE NUMBERS OF FLEA BEETLES EMERGING
FROM SOIL SURROUNDING HOST PLANTS

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The apparatus described herein was developed at the Oxford, N. C., laboratory and has been used rather extensively during the last several seasons for obtaining estimates of the numbers of adult tobacco flea beetles (Epitrix parvula (F.)) emerging from the soil, particularly in tobacco plant beds. With slight modifications in shape, size, and covering it can be used in experiments with many different insect pests where an efficient cage suitable for retaining such insects is required.

The finished cage is cylindrical and will cover a space equal to 1 square foot on the soil surface. The frame is constructed of $\frac{1}{4}$ -inch rods of black malleable iron and measures 21 inches in height and $13\frac{1}{2}$ inches in diameter (fig. 1, A). The two circles are made from single lengths of the rods, 42.4 inches long, which are shaped in a pipe former and the ends welded together. The three supporting rods are spaced at equal distances about the circles. The upper circle is welded to the ends of the three upright rods, which are then attached to the outer side of the lower circle. After the eight welds are made the frame is painted to retard oxidation of the metal.

Cloth, consisting of 32 by 28 strands per inch, is sewed to form a cylinder 36 inches long, which is slipped over the frame. This cloth envelope is sewed to the lower circle and attached with thread at six places on the upper circle. To preserve the cloth near the ground, a strip 3 inches wide around the base of the cage is sprayed with paint.

The cage is placed in position for operation by forcing the projecting rods into the ground and banking 1 or 2 inches of soil around the base to make it insect-tight. The open cloth top is closed with a string slip knot, and the other end of the string is attached to a stake, as shown in figure 1, B.

While these cages are not often required to withstand rough usage, they are substantial enough to be operated for many seasons. Some of them have been used during four seasons to date and, with annual painting, can be used indefinitely (fig. 2). The cloth envelopes, the bases of which by necessity must come in contact with the soil, last from a month to 6 weeks, even under conditions of excessively heavy precipitation. This is sufficient time for the development and emergence of a single brood of the tobacco flea beetle. During a 30-day period a total of 796 beetles were retained and recovered in one of these cages situated in a tobacco plant bed. Actual recovery is effected by opening the top of the cloth cylinder and removing the beetles in any manner desired.



Figure 2.—A series of recovery cages in operation in a tobacco plant bed adjacent to a tobacco field.

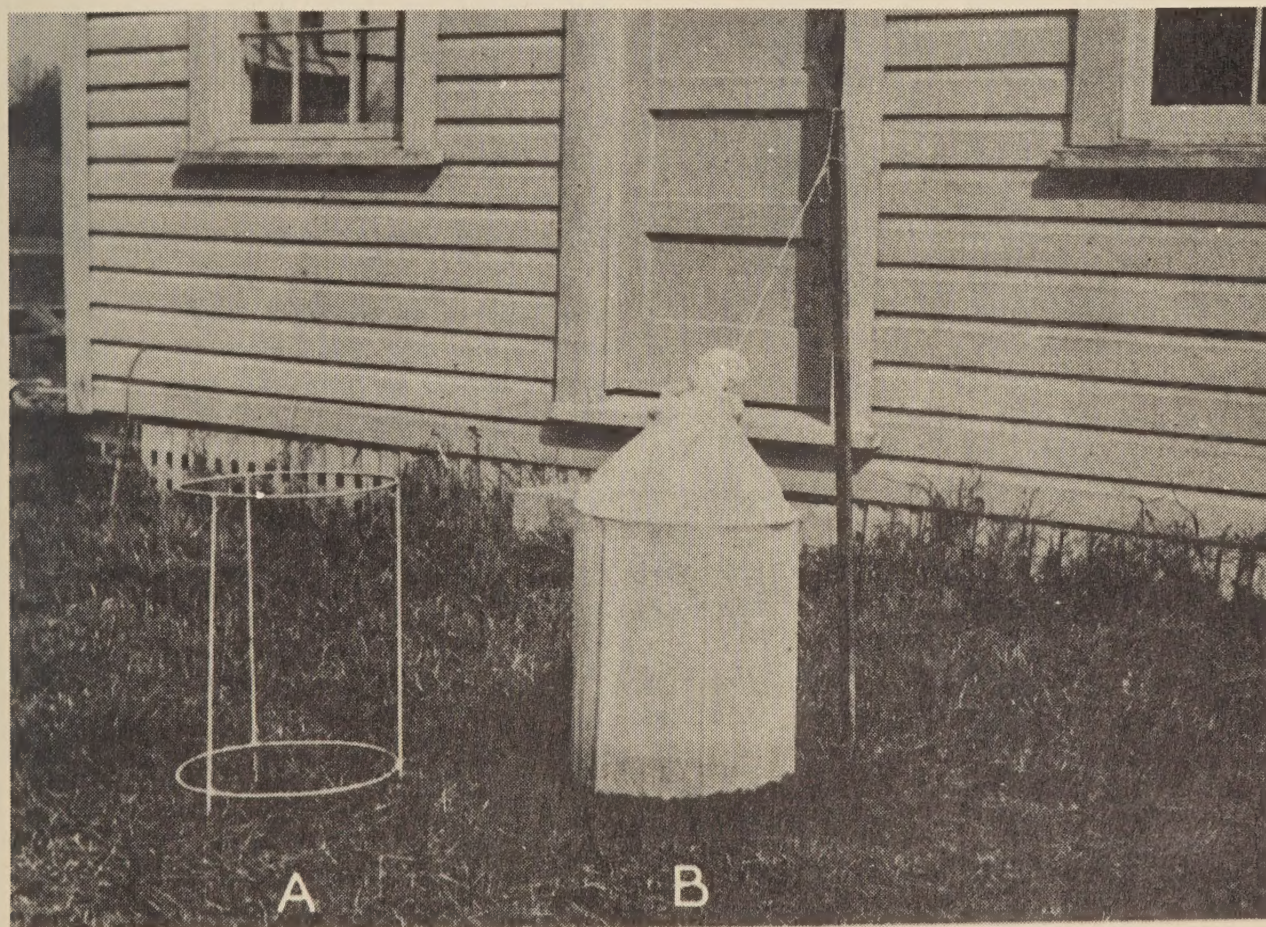


Figure 1.—Recovery cage. A, Recovery cage frame, uncovered. B, This recovery cage, covered, staked, and mounded, is ready for operation.

Figure 1--Inventory map of the study area in 1980
Figure 2--Inventory map of the study area in 1985

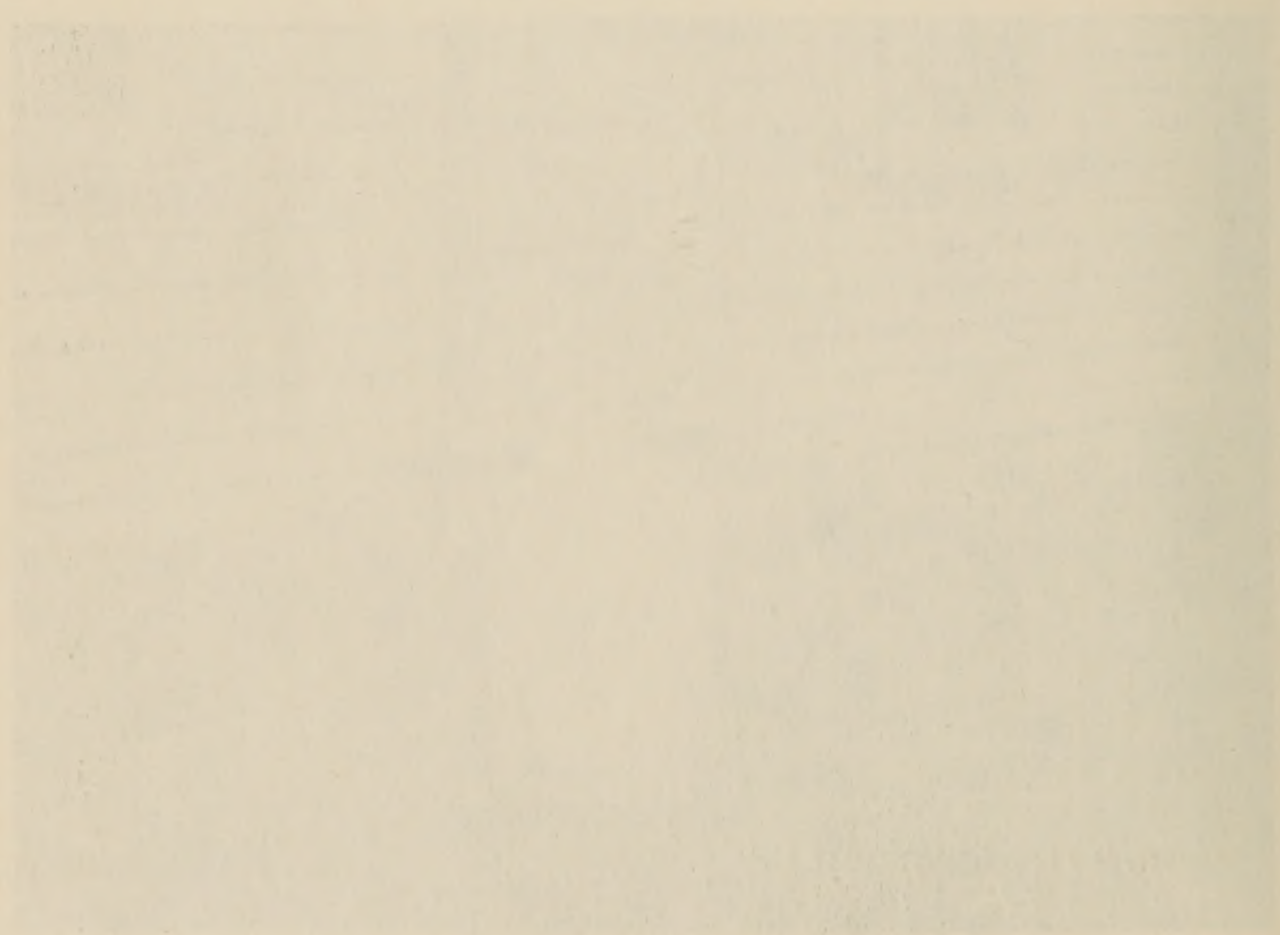


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Figure 2--Inventory map of the study area in 1985
Scale for Figure 1